SAGE GROUSE SUPPORTING INFORMATION
COMMISSION 7/10/14

**2014 Survey Results**

During spring 2014, biologists surveyed 84 of the 88 leks that are designated for Adaptive Harvest Management (AHM).

The overall average sage-grouse male count on leks this spring was 13.1 males/lek. This represents a decline from counts in 2013 and is ~54% below the long term average of 28.4 males/lek (1980-2013). Sage-grouse lek counts have been declining since 2008. This may be part of the normal cyclic variation in sage-grouse populations, however 2013 and 2014 counts represent an all time low since 1980 (Figure 1).

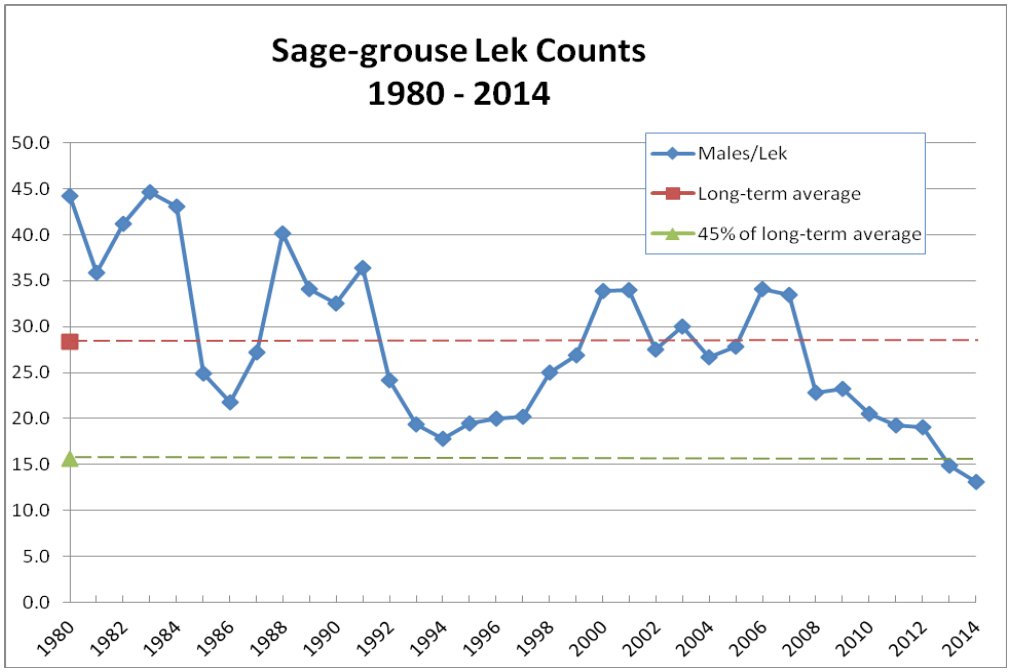



Figure 1. Annual average male counts on leks with 10 or more years of count data statewide (n = 34-88 surveyed leks). Long-term average (red dotted line) is 28.4 males/lek; 45% of long-term average (green dotted line) is 15.6 males/lek.

The Western Association of Fish and Wildlife Agencies (WAFWA) identified sage-grouse management zones that transcend state boundaries. 2014 counts as a percent below long term average by WAFWA Sage-grouse Management Zone are as follows: MZI (eastern MT) = 58%; MZII (primarily Carbon County, MT) = 42%; and MZ IV (southwest MT) =41% (Figures 2-3). These management zones are different from the sage-grouse harvest management zones approved by the Commission in early 2014.

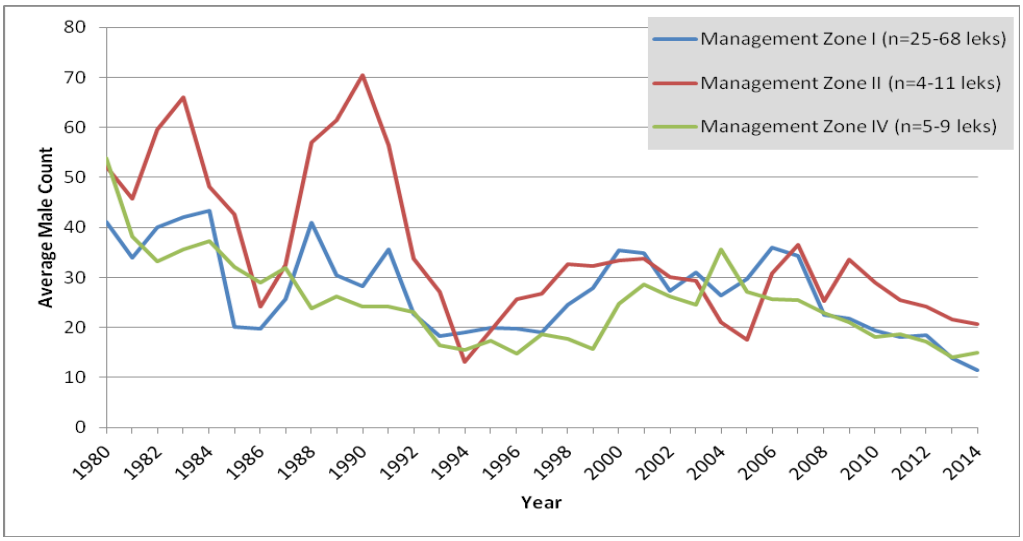
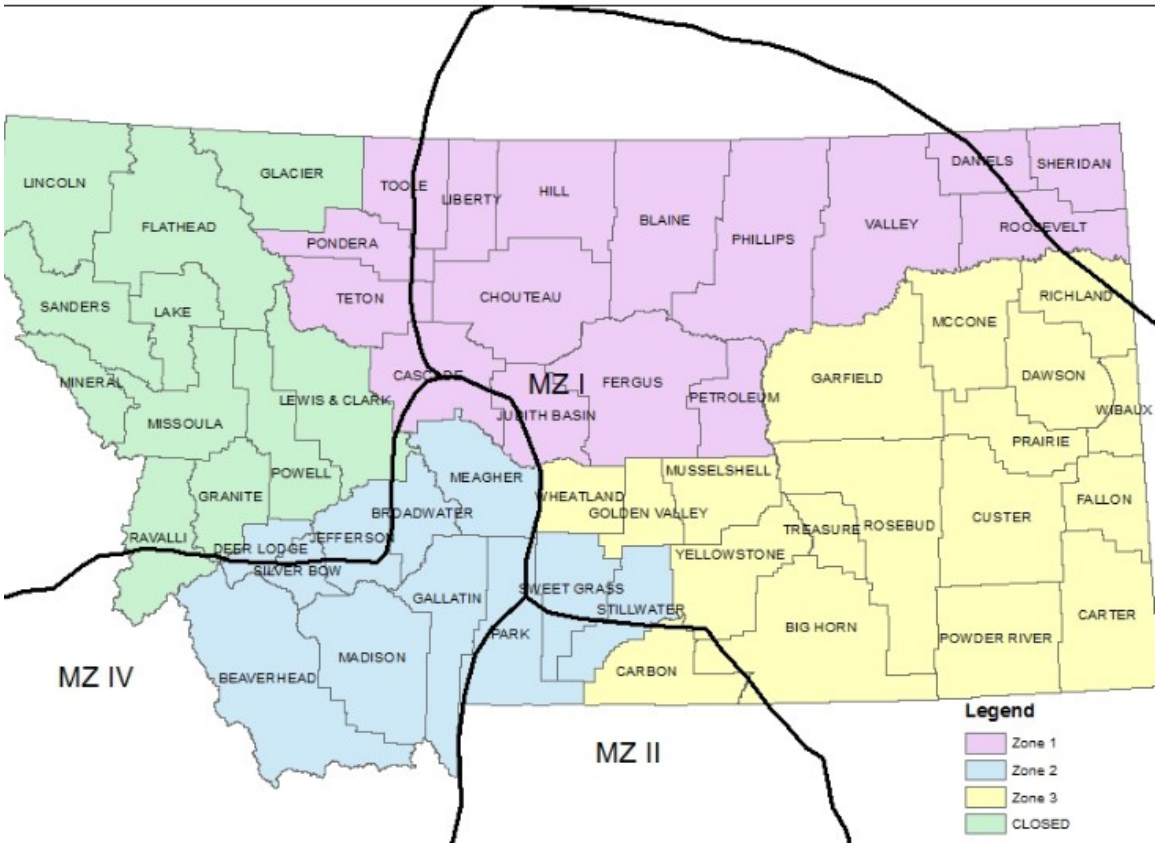


Figure 2. Long-term sage-grouse lek counts by WAFWA Management Zone in Montana.

Figure 3. WAFWA Sage-grouse harvest Management Zones I, II, and IV in Montana (FW Commission harvest management zones in color).



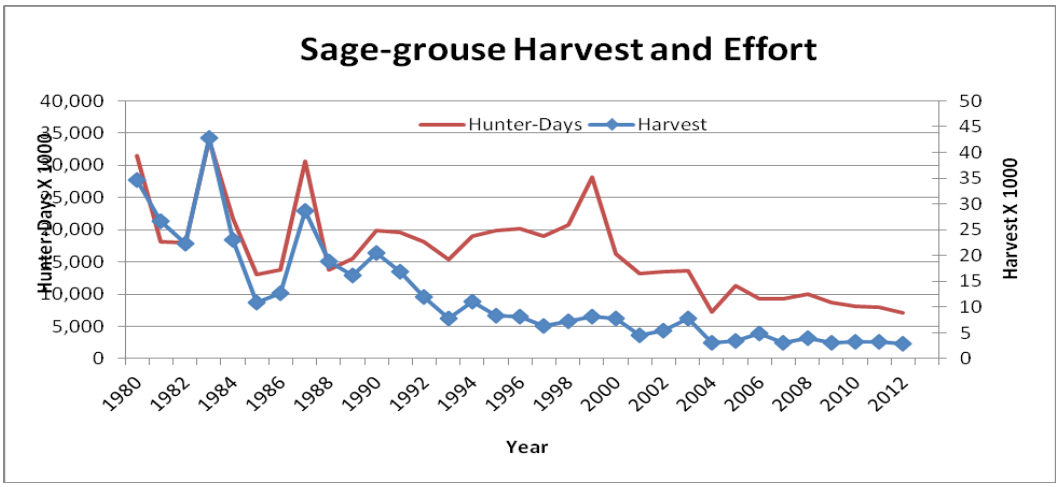


Figure 3. Sage-grouse harvest and hunter effort in Montana, 1980-2012.

## Sage-grouse Harvest

Hunters harvested approximately 2,815 sage-grouse in 2012 (Table 1). This was comparable to the 2009 – 2011 harvests. Figure 3 shows long term trends in harvest and hunter effort.

Table 1. Sage-grouse harvest estimates by FWP Region in 2012 (2013 harvest estimates scheduled to be completed late June).

| FWP Region | 2012 Harvest estimates |
|---|---|
| R3 | 600 |
| R4 | 552 |
| R5 | 279 |
| R6 | 861 |
| R7 | 523 |

**Sage-grouse Population Demographics**

Three vital rates that are the most important for sage-grouse population growth, in order, are female survival, chick survival, and nest success (Taylor et al. 2012). Montana estimates are within range-wide estimates for these vital rates (Table 3).

Table 2. Summary of range-wide and Montana sage-grouse vital rates in published literature.

| Vital Rate | Range-wide rates[1] | Montana rates | Years of MT study | Location | Reference |
|---|---|---|---|---|---|
| Nest success | 15 – 86% | 64% | 1969 - 1972 | Petroleum Co. | Wallestad and Pyrah 1974 |
| | | 28 - 43% | 2004 - 2005 | Musselshell and Golden Valley Co. | Sika 2006 |
| | | 35 – 61% | 2001 - 2003 | S. Phillips Co. | Moynahan et al. 2007 |
| | | 53 – 61% | 2007 - 2008 | Milk River Basin | Tack 2009 |
| | | 30 – 54% | 2011 - 2013 | Musselshell and Golden Valley Co. | Berkeley, unpubl. data[2] |
| Chick survival | 12 – 50% | 33 – 38% | 2007 - 2008 | Milk River Basin | Tack 2009 |
| | | 12% | 2011 - 2012 | Musselshell and Golden Valley Co. | Berkeley, unpubl. data[2] |
| Hen survival | 37 – 78% | 25 – 96%[3] | 2001 – 2003 | S. Phillips Co, Montana | Moynahan et al. 2006 |
| | | 94% (nesting season) 84 – 93% (late summer) | 2004 - 2005 | Musselshell and Golden Valley Co. | Sika 2006 |
| | | 55 – 91% (spring/summer) 84 – 92% (over winter) | 2007 - 2008 | Milk River Basin | Tack 2009 |
| | | 59% | 2011 - 2012 | Musselshell and Golden Valley Co. | Berkeley, unpubl. data |

[1]Range-wide stimates from Connelly et al. 2011.

[2] Spring and early summer weather during 2011 and 2012 were subject to historic extremes of high precipitation in 2011 and severe drought in 2012, which likely affected nest and chick survival rates.

[3]25% annual survival in 2003 was attributed to a WNv outbreak and severe winter conditions; annual survival in 2001-2002 averaged 96%.